Effect of degree of bilingualism on metalinguistic awareness in English-French bilingual children

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Introduction

Bialystok's theoretical framework (Bialystok & Ryan, 1985; Bialystok, 1986a & 2001) describes metalinguistic performance in terms of two cognitive components – analysis of linguistic knowledge and control of linguistic processing. Our interest lies with *control of linguistic processing*, the skill required to resolve a conflict between form and meaning, or to inhibit some misleading but highly salient aspect of a stimulus while attending to another. The framework predicts that bilingual children will have an advantage over matched monolinguals on tasks requiring relatively high degrees of selective attention, a hypothesis supported by numerous studies. With regard to degree of bilingualism, certain studies indicate that young balanced bilinguals outperform dominant bilinguals (e.g. Ianco-Worrall, 1972; Ben-Zeev, 1977; Bialystok, 1988a; Ricciardelli, 1992; Cromdal, 1999), findings supporting Cummins' (1976) threshold hypothesis which predicts that bilinguals with high levels of competence in their two languages may benefit from cognitive advantages in areas such as metalinguistic awareness.

Objectives

We investigate the effects of differing levels of bilingualism on control of linguistic processing, henceforth, *control*. Balanced bilingual performance is compared to dominant bilingual performance on four metalinguistic tasks requiring control and, following Bialystok and Cummins, we hypothesise that the balanced bilinguals will outperform the dominant bilinguals.

Research questions

1. Is there a significant difference in the performance of the balanced and dominant bilinguals (1) on the English metalinguistic tasks and (2) on the French metalinguistic tasks?
2. Is there a significant difference in the performance of the balanced and dominant bilinguals when only their best score on each metalinguistic task is taken into consideration (i.e. either their score on the English version or their score on the French version)?
3. To what extent do bilinguals perform the metalinguistic tasks better in their stronger language?

Methods

Setting

- An international state primary school in France
- To be admitted to the school's English section, children need to have an excellent working knowledge of English; French is taught as a foreign language to children with little or no French
- French national curriculum covered in 20 hours/week; British national curriculum taught for remaining six hours

Participants

- 38 French-English bilinguals (23 girls, 15 boys) aged from 6;10 to 8;3 (M = 7;6; SD = 4) in 2nd year of primary school, from middle to high SES families based on parents' occupations and educational levels
- 29 balanced bilinguals and 9 dominant bilinguals according to scores on *British Picture Vocabulary Scale-II* (Dunn *et al*., 1997) and *Échelle de Vocabulaire en Images Peabody* (Dunn *et al*., 1993)

Metalinguistic tasks

- English tasks from Ricciardelli (1993) designed to assess control; French tasks modelled on English tasks
- All tasks given to children in English and French, with exception of four children who had been in France for under a year, who only did English tasks

➢ ***Word order repetition***
- Based on task by Bowey (1986) to evaluate syntactic awareness
- Repeat simple, meaningful sentences each containing incorrect word order, e.g. "*I hungry am*"
  - ✧ Ignore meaning and incorrect syntax; low levels of control

➢ ***Word renaming***
- Based on Piaget's (1929) sun-moon problem, to assess awareness of arbitrary nature of word-referent relationship
- Children asked, e.g. "*Supposing you were making up names for things; could you call the sun "the moon" and the moon "the sun"?*" Then "*What would you call the thing in the sky when you go to bed at night?*" and "*What would the sky look like when you're going to bed?*"
  - ✧ Focus attention on form while suppressing very salient but irrelevant meaning; high control levels

➢ ***Symbol substitution***
- Based on task by Ben-Zeev (1977) to assess understanding of arbitrary nature of word-referent relationship
- Substitute one word in a sentence for another, with resulting sentence violating rules of syntax, e.g. "*I am cold*" and child asked to substitute '*I*' with the word '*ice*' (=> "*Ice am cold*")
  - ✧ Overlook meaning and incorrect syntax; fairly high levels of control

➢ ***Grammar judgements***
- Based on work by Bialystok (1986a; 1986b; 1988a; 1988b)
- Judge grammatical, anomalous sentences, e.g. "*The fish are walking*", to say if grammatically correct
  - ✧ Inhibit misleading, anomalous meaning and selectively attend to correct form; fairly high levels of control

Results

Research question 1

- Independent samples t-tests conducted on difference between scores of balanced and dominant bilinguals for English and French tasks showed no effect for any of the tasks => little support for our hypothesis.

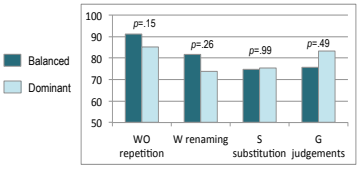

Fig. 1. Mean scores English tasks (N=38)

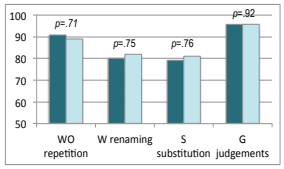

Fig. 2. Mean scores French tasks (N=34)

Research question 2

- Independent samples t-tests conducted on difference between the balanced and dominant bilinguals' scores, taking into account only their highest score on each task, lend some support to our hypothesis. The former outperformed the latter on all four tasks, with word renaming, perhaps the most cognitively challenging control task, reaching statistical significance.

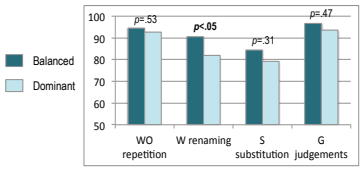

Fig. 3. Mean scores on best performance (N=38)

Research question 3

- Comparison of scores of 34 children who did metalinguistic tasks in both languages to see whether they performed each task better in English (E), French (F), or whether they obtained the same scores in both versions of the task (F=E).
  - French-dominant and English-dominant children have very similar distribution of best performances
  - Children do not systematically perform better in their dominant language
  - Over 1/4 of children perform better in their non-dominant language
  - Children whose competence in French and English is fairly balanced have three sets of results which are much closer to each other, with almost 1/3 of scores exactly the same in both language versions of the same task

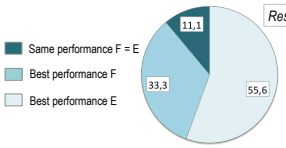

Fig. 4. English dominant (N=9)

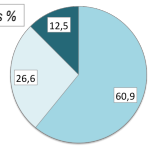

Fig. 5. French dominant (N=16)

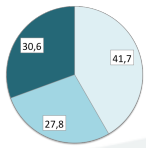

Fig. 6. Languages balanced (N=9)

Discussion

- Findings offer some support to Bialystok's and Cummins' predictions, although only one result reached statistical significance. Balanced bilinguals outperformed dominant bilinguals on metalinguistic tasks requiring control, but only when their best score on each task was considered.
- While some dominant bilinguals perform better in their stronger language, others do not. This is an important finding, consistent with Cromdal (1999) who hypothesised that since dominant bilinguals have to monitor their weaker language more closely to avoid making syntactical errors, they are perhaps more skilled at applying metalinguistic skills to the weaker language.
- This provides an additional argument for testing bilingual children systematically in both languages, to gain access to maximal level of metalinguistic awareness which may be through the weaker language.
- Grosjean (2008, p. 13-14) "*the co-existence and constant interaction of the two languages in the bilingual has produced a different but complete language system*". This holistic view perhaps explains how dual language users draw on resources from each language to respond to their linguistic needs.
- Giving bilingual children the same metalinguistic tasks in each language and then only using their best score from each task may be one way of accessing this "*complete language system*".

Future directions

Further research is warranted in a larger sample to compare performance on a range of metalinguistic tasks of groups of children with differing degrees of bilingualism (high English & high French; high English & low French; low English & high French; low English & low French), as well as groups of matched French and English monolinguals. With six different groups, Bialystok's and Cummins' hypotheses could be tested with greater precision. Grosjean's hypothesis, claiming that the organisation and structure of bilinguals' language competence and cognitive processing systems differ from those of matched monolinguals, could then be explored further. If the results were replicated, we might gain new insights into how bilingual competence affects verbal control and, in particular, how the two languages complement one another, leading perhaps to enhanced metalinguistic awareness even in the child's weaker language.

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